



## Application of thermoluminescence dating for pyroclastic deposits on the Kuril Islands

**R. Ph. Bulgakov**

*Institute of Marine Geology and Geophysics, FEB RAS,  
Yuzhno-Sakhalinsk, Russia*

### Abstract

The results of thermoluminescence dating application have been presented for quaternary deposits on the Kuril Islands. The thermoluminescence tests were done in the late eighties of last century but the results did not published yet. The results obtained reveal the luminescence of quartz from pyroclastic in red light spectra. The same phenomenon was observed also by other researchers on the Japanese islands and later at the other regions. Recognition of peculiarities of quartz crystals of the volcanogenic origins completely has been proved by recent detailed physics-chemical investigations of Japanese researchers, which suggested model explaining red luminescence of the pyroclastic quartz.

### Keywords

thermoluminescence dating of quaternary deposits,  
pyroclastic, quartz, Kuril Islands

**For citation:** Bulgakov R.Ph. Application of thermoluminescence dating for pyroclastic deposits on the Kuril Islands. *Geosystems of Transition Zones*, 2018, vol. 2, N 4, p. 392–397. (In Russ.). doi: 10.30730/2541-8912.2018.2.4.392-397

**Для цитирования:** Булгаков Р.Ф. Опыт применения метода термолюминесцентного датирования к пирокластическим отложениям Курильских островов. *Геосистемы переходных зон*. 2018. Т. 2, № 4. С. 392–397. doi: 10.30730/2541-8912.2018.2.4.392-397

### References

1. Вагнер Г.А. *Научные методы датирования в геологии, археологии и истории*. М.: Техносфера, 2006. 576 с.
2. Власов В.К., Куликов О.А. *Радиотермолюминесцентный метод датирования рыхлых отложений*. М.: МГУ, 1988. 72 с.
3. Иванов В.И. *Курс дозиметрии*. 3-е изд., перераб. и доп. М.: Атомиздат, 1978. 392 с.
4. Купцов В.М. *Методы хронологии четвертичных отложений океанов и морей*. М.: Наука, 1989. 288 с.
5. Тайт М. Некоторые осложняющие факторы и учет их влияния на термолюминесцентное определение возраста // *Физика минералов*. М.: Мир, 1971. С. 120–133. (Науки о Земле; т. 37).
6. Aitken M. *An introduction to optical dating. The dating of quaternary sediments by the use photon-stimulated luminescence*. Oxford: Oxford Univ. Press, 1998. 267 p.
7. Hashimoto T., Hayashi Y., Koyangi A., Yokosaka K., Kimura K. Red and blue coloration of thermoluminescence from natural quartz sands // *Intern. J. Radiation Appl. Instrumentation. D. Nucl. Tracks Radiat. Measurements*. 1986. Vol. 11, N 4-5. P. 229–235. [https://doi.org/10.1016/1359-0189\(86\)90039-7](https://doi.org/10.1016/1359-0189(86)90039-7)
8. Hashimoto T. An overview of red-thermoluminescence (RTL) studies on heated quartz and RTL application to dosimetry and dating // *Geochronometria*. 2008. Vol. 30 (1). P. 9–16. <https://doi.org/10.2478/v10003-008-0011-z>
9. Pilleyre Th., Montret M., Fain J., Miallier D., Sanzelle S. Attempts at dating ancient volcanoes using the red TL of quartz // *Quaternary Science Reviews*. 1992. Vol. 11 (1-2). P. 13–17. [https://doi.org/10.1016/0277-3791\(92\)90036-8](https://doi.org/10.1016/0277-3791(92)90036-8)